REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-34 are presently active in this case, Claims 1, 12, 23, and 34 having been amended by way of the present Amendment. No new matter has been entered. (See, e.g., page 14, line 15, through page 15, line 11.)

In the outstanding Official Action, Claims 1-3, 5, 6, 12-14, 16, 17, 23-25, 27, 28, and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda (U.S. Patent No. 6,285,470) in view of Zuniga (U.S. Patent No. 5,280,367). Claims 4, 15, and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Jin (U.S. Patent No. 5,880,858). Claims 7-9, 18-20, and 29-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Dhawan (U.S. Patent No. 5,271,064). Claims 10, 21, and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Saito (U.S. Patent No. 5,966,455). Claims 11, 22, and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Allen (U.S. Patent No. 6,044,172). For the reasons discussed below, the Applicant requests the withdrawal of the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable

expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicant submits that a *prima facie* case of obviousness cannot be established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the limitations recited in independent Claims 1, 12, 23, and 34.

The Applicant respectfully submits that the cited references, either when taken singularly or in combination, fail to teach or suggest edge-detection of a digital color original image obtained by digitally inputting only a single side of a document color-printed on both sides of paper, and generating a show-through removed image as an image from which the component corresponding to the show-through has been removed from the original image without using the image from the opposite side of the document and without degradation of an image printed on the single side of the document, in the manner recited in Claims 1, 12, 23, and 34.

Each of Claims 1, 12, 23, and 34 recite inventions that include steps or apparatuses for generating a show-through removed image as an image from which the component corresponding to the show-through has been removed from the original image without using the image from the opposite side of the document. Thus, it is unnecessary to scan the opposite side of the document in order to generate a quality reproduction of the image printed on the single side of the document, even if a show-through of the image on the opposite side is present in the original image. Furthermore, the present invention provides for the removal of the show-through from the original image without degradation of the image printed on the

single side of the document. Accordingly, this invention provides for the quality reproduction of an image on a single side of a document printed on both sides without the need for specific input equipment, such as a double-side scanner, a book scanner, etc. and without sacrificing the image printed on the single side of the document. (See, e.g. page 10, lines 12-24, and page 14, line 15, through page 15, line 11.) The Applicant notes that the Matsuda et al. reference and the Zuniga reference, either when taken singularly or in combination, fail to describe or suggest such features.

With regard to the issue of whether the Matsuda et al. reference teaches generating a show-through removed image as an image from which the component corresponding to the show-through has been removed from the original image ***without using the image from the opposite side of the document***, the Official Action indicates that the Matsuda et al. reference "cites alternative operations that can be performed by the system and/or selected by the user which only require that the detected show-through part from the histogram of the single side of the document be used to generate a show-through removed image." (Page 2, paragraph 2.) Page 3 of the Official Action refers to column 7, lines 23-33, and column 8, line 65, through column 9, line 6 of the Matsuda et al. reference for the teaching of these features.

The portion of the Matsuda et al. reference cited for the teaching of this "alternative operations" describes in column 7 a formula (7) that is used to calculate the base brightness (L_S) using a linear relationship based on a detected peak brightness (L_P) as in the prior art, rather than calculating the base brightness using a corrected peak brightness (L_P') as in formula (6). (Column 7, lines 15-33.) Columns 8 through 9 further indicate a situation in

which "the show-through density is high" and in which "the user wants to remove show-through images completely on the sacrifice of weak part of the image being read" then the Matsuda et al. reference teaches that the user is allowed to select the base brightness detection procedure using the formula (7). (Column 8, line 65, through column 9, line 6.) However, the Matsuda et al. reference notes that calculating the base brightness (L_S) using a detected peak brightness (L_P) as in the prior art formula (7), results in a failure to distinguish between the show-through and the image, thus resulting in an improper setting of the base brightness. (See, column 5, lines 5-45.) Thus, if the user eliminates part or all of the show-through using the prior art formula (7), then the user will eliminate not only the show-through from the back of the document but also will eliminate a portion of the image from the front of the document. The Matsuda et al. reference repeatedly notes that such a procedure will "sacrifice a weak part of the image" or sacrifice "a certain degree of reproducibility." (See, e.g., column 9, lines 3-4, 8-9 and 41-47.) The Matsuda et al. reference describes procedures that produce a quality front image and removal of the show-through image only when the back side image is obtained and subtracted from the front side image. (See, e.g., column 2, lines 46-49, column 9, lines 17-23, and 48-50.)

Thus, the Matsuda et al. reference does not disclose an apparatus or method that generates a show-through removed image as an image from which the component corresponding to the show-through has been removed from the original image without using the image from the opposite side of the document ***and without degradation of an image printed on the single side of the document***, in the manner recited in Claims 1, 12, 23, and 34.

The Matsuda et al. reference describes either eliminating the show-through by subtracting the image from the back side, or removing the show-through by sacrificing part of the image on the front side along with the removal of the show-through. The Matsuda et al. does not disclose or suggest removing show-through without using the image from the opposite side of the document ***and*** without degradation of an image printed on the single side of the document.

The Zuniga et al. reference is cited for the teaching of background color estimation based on edge detection information. The Zuniga et al. reference describes a system that converts a scanned image of a complex document into an image where text has been preserved and separated from the background. The Zuniga reference does not specifically discuss what to do to remove show-through. The Zuniga reference mentions in passing the possibility that very light text or text showing through from the back might be present in a scan block (column 4, lines 48-54); however, the Zuniga reference never again mentions how show-through text would be differentiated from very light text, which is obviously intended to be retained as text in the final scanned document. Thus, the Applicant submits that the Zuniga reference fails to supplement the deficiencies in the teachings of the Matsuda et al. reference discussed above.

Accordingly, a *prima facie* case of obvious cannot be established based on the combination of the Matsuda et al. reference and the Zuniga reference, since these references, either when taken singularly or in combination, fail to disclose or suggest removing show-through without using the image from the opposite side of the document ***and*** without

degradation of an image printed on the single side of the document in the manner recited in independent Claims 1, 12, 23, and 34. Therefore, the Applicant respectfully requests the withdrawal of the obviousness rejection of the independent claims.

Claims 2-11, 13-22, and 24-33 are considered allowable for the reasons advanced for Claims 1, 12, and 23 from which they respectively depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, nor suggested by the applied references when those features are considered within the context of Claims 1, 12, and 23.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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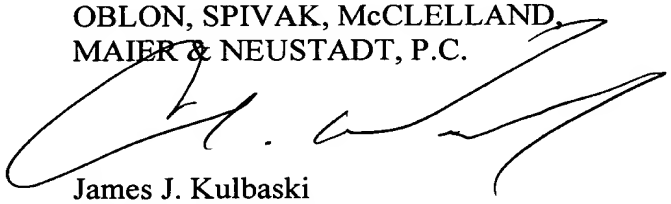

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